AMENDMENTS TO THE CLAIMS

This listing of claims will replace all prior versions, and listings, of claims in the application:

Listing of Claims

1. (Currently Amended) A rheometer for determining a rheological property of a sample, comprising:

a driver for applying an alternating movement to a surface of the sample for causing an alternating movement of the sample;

a force measuring device for providing a force signal indicative of the reaction force exerted by the sample on the driver;

a displacement measuring device for providing a signal indicative of the alternating movement of the sample;

a processor for receiving the force signal and the movement signal to determine the rheological property of the sample; and

a signal generator for supplying to the driver a frequency sweep signal having a monotonic group delay function to cause the driver to supply the alternating movement of the sample,

wherein the frequency sweep signal has a monotonic group delay function with a maximum value less than the acquisition period.

2. (Cancelled)

3. (Currently Amended) The rheometer of claim ~~2~~ 3 wherein the frequency sweep signal has small crest factors close to 3 dB if using a flat amplitude envelope in the time domain.

4. (Cancelled)

5. (Previously Presented) The rheometer of claim 1 wherein the apparatus includes a sample support comprised of a top plate and a bottom plate which define a space for receiving the sample.

6. (Previously Presented) The rheometer of claim 1 wherein the displacement measuring device comprises a displacement transducer.

7. (Previously Presented) The rheometer of claim 1 wherein the force measuring device comprises a load cell.

8. (Previously Presented) The rheometer of claim 1 wherein the processor includes an analogue to digital converter for converting the signal from the load cell to a digital signal, and an analogue to digital converter for converting the signal from the displacement measuring means to a digital signal.

9. (Previously Presented) The rheometer of claim 8 wherein the processor is for determining the fourier transform of both the force signal and the movement signal, and the ratio of the fourier transform of the force signal $F(\omega)$ to the fourier transform of the movement signal $H(\omega)$.

10. (Previously Presented) The rheometer of claim 5 wherein at least one of the top plate and bottom plate is circular and has a radius a, the plates are separated by an average distance h, $F(\omega)$ is a force signal, $H(\omega)$ is a movement signal and the property which is calculated is the complex modulus

$$G^*(\omega) = h^3/3\pi a^4 \times F(\omega)/H(\omega).$$

11. (Currently Amended) The rheometer of claim 1 wherein the signal generator is for supplying the frequency sweep signal which is ramped up in amplitude at commencement of the signal and ramped down in amplitude at cessation of the signal.

12. (Previously Presented) The rheometer of claim 11 wherein the signal is ramped up to full scale by a ramp function given by $\sin^2(\pi \times i/2n)$ and ramped down by a ramp function given by $\cos^2(\pi \times i/2n)$ where there are n items in the signal and i indexes a particular item.

13. (Currently Amended) The rheometer of claim 12 wherein the ramping up of the signal and ramping down of the signal is performed ~~by multiplying the signal~~ for one signal period to respectively grow the signal from zero and then to attenuate the signal back to zero.

14. (Currently Amended) A method of determining a rheological property of a sample, comprising:

applying by a driver an alternating movement to a surface of the sample for causing an alternating movement of the sample;

measuring a force signal indicative of a reaction force exerted by the sample; measuring a signal indicative of the alternating movement of the sample;

processing the force signal and the movement signal to determine the rheological property of the sample; and

supplying to the driver a frequency sweep signal having a monotonic group delay function to produce the alternating movement of the sample,

wherein the frequency sweep signal has a monotonic group delay function with a maximum value less than the acquisition period.

15. (Cancelled)

16. (Currently Amended) The method of claim ~~15~~ 14 wherein the frequency sweep signal has small crest factors close to 3 dB if using a flat amplitude envelope in the time domain.

17. (Cancelled)

18. (Previously Presented) The method of claim 14 wherein the method includes supporting the sample between a top plate and a bottom plate which define a space for receiving the sample.

19. (Previously Presented) The method of claim 14 wherein the displacement is measured by a displacement transducer.

20. (Previously Presented) The method of claim 14 wherein the force is measured by a load cell.

21. (Previously Presented) The method of claim 14 wherein the processing includes converting the force signal to a digital signal, and converting the displacement signal to a digital signal.

22. (Previously Presented) The method of claim 14 wherein the processor further includes determining the fourier transform of both the force signal and the movement signal, and the ratio of the fourier transform of the force signal to the fourier transform of the movement signal.

23. (Previously Presented) The method of claim 18 wherein at least one of the top plate and bottom plate is circular and has a radius a, the plates are separated by an average distance h, $F(\omega)$ is a force signal, $H(\omega)$ is a movement signal and the property which

is calculated is the complex modulus

$$G^*(\omega) = h^3/3\pi a^4 \text{ x } F(\omega)/H(\omega).$$

24. (Currently Amended) The method of claim 14 wherein the frequency sweep signal which is ramped up in amplitude at commencement of the signal and ramped down in amplitude at cessation of the signal.

25. (Previously Presented) The method of claim 24 wherein the signal is ramped up to full scale by a ramp function given by $\sin^2(\pi \text{ x } i/2n)$ and ramped down by a ramp function given by $\cos^2(\pi \text{ x } i/2n)$ where there are n items in the signal and i indexes a particular item.

26. (Currently Amended) The method of claim 25 wherein the ramping up of the signal and ramping down of the signal is performed ~~by multiplying the signal~~ for one signal period to respectively grow the signal from zero and then to attenuate the signal back to zero.

27. – 53. (Cancelled)